

IN THE CLAIMS

Each claim of the application is set forth below with a parenthetical notation immediately following the claim number indicating the claim status. The Examiner's entry of the claim amendments under Section 1.121 is respectfully requested.

1. (CURRENTLY AMENDED) A process for removing contaminants from a surface of a ~~first material layer semiconductor device~~ during fabrication of an integrated circuit prior to depositing a second material layer thereover, the process, comprising:

- (a) cleaning the surface;
- (b) forming a hydrogen termination on the surface; and
- (c) exposing the surface to a nitrogen-containing gas at a ~~relatively low deposition~~ temperature of between about 500° C and 800° C to remove contaminants from the surface;
- (d) depositing the second material layer at the deposition temperature,
- (e) wherein steps (c) and (d) are performed in a single deposition chamber.

2. (ORIGINAL) The process of claim 1 wherein the surface comprises a surface of a material layer selected from among a doped epitaxial material, an un-doped epitaxial material, a doped bulk silicon substrate and an un-doped bulk silicon substrate.

3. (CURRENTLY AMENDED) The process of claim 1 wherein ~~the a~~ a step (a) further comprises:

- (a1) subjecting the surface to an HF dip; and
- (a2) cleaning the surface using an RCA cleaning process;

4. (CURRENTLY AMENDED) The process of claim 1 wherein ~~the a~~ a step (b) further comprises:

- (b1) subjecting the surface to an HF dip; and
- (b2) drying the surface with isopropyl alcohol.

5. (ORIGINAL) The process of claim 1 wherein the nitrogen-containing gas comprises nitrogen fluoride.

6. (CANCEL)

7. (CURRENTLY AMENDED) The process of claim 1 wherein a duration of ~~the~~ a step (c) is between about 20 seconds and 80 seconds.

8. (CURRENTLY AMENDED) The process of claim 1 wherein ~~the a~~ step (c) is practiced at a temperature of less than about 800°C, ~~without compromising the integrity of the semiconductor device.~~

9. (CURRENTLY AMENDED) The process of claim 1 wherein ~~the a~~ step (c) is practiced at about 700°C for a duration of about 20 seconds at a flow rate of about 75 sccm.

10. (CURRENTLY AMENDED) The process of claim 1 ~~further comprising:~~
~~(d) forming a material layer over the surface,~~ wherein the second material layer is selected from between a doped polysilicon material and an un-doped polysilicon material.

11. (CURRENTLY AMENDED) The process of claim 1 ~~40~~ wherein ~~the~~ steps (a), (b), (c) and (d) are performed in a single chamber.

12. (CURRENTLY AMENDED) The process of claim 1 ~~40~~ wherein during ~~the~~ execution of ~~the~~ steps (a), (b), (c) and (d) ~~the a~~ pressure is maintained at a relatively constant value.

13. (CANCEL)

14. (CURRENTLY AMENDED) The process of claim 1 wherein step (c) further comprises ~~(d)~~ subjecting the surface to a hydrogen bake.

15. (CURRENTLY AMENDED) The process of claim 14 wherein ~~the a~~ step ~~(d)~~ (c2) further comprises supplying hydrogen for a duration of about 60 to 90 seconds at a temperature of about 700°C.

16. (CURRENTLY AMENDED) The process of claim 14 ~~further comprising:~~
~~(e) forming a material layer over the surface,~~ wherein the second material layer is selected from between a doped polysilicon material and an un-doped polysilicon material.

17. (CURRENTLY AMENDED) The process of claim 14 ~~46~~ wherein ~~the~~ steps (a) through (e) ~~(d)~~ are performed in-situ.

18. (CURRENTLY AMENDED) The process of claim 1 ~~further comprising:~~
~~(d) forming a material layer over the surface,~~ wherein the second material layer comprises an arsenic-doped polysilicon material.

19. (CURRENTLY AMENDED) A process for removing contaminants from a surface of a semiconductor device during fabrication of an integrated circuit, comprising:

(a) ~~exposing the surface to a nitrogen-containing gas at a relatively low temperature of between about 500°C and 800°C and at a flow rate of about 200 sccm to remove contaminants from the surface; and~~

(b) depositing a polysilicon layer on the surface in situ.

20. (ORIGINAL) The process of claim 19 wherein the nitrogen-containing gas comprises nitrogen fluoride.

21. (CANCEL)

22. (CURRENTLY AMENDED) The process of claim 19 wherein a duration of the a step (a) is between about 20 seconds and 80 seconds.

23. (CURRENTLY AMENDED) The process of claim 19 wherein ~~the a step (a) is practiced at a temperature of less than about 800°C, without compromising the integrity of the semiconductor device.~~

24. (CURRENTLY AMENDED) The process of claim 19 wherein ~~the a step (a)~~ is practiced at about 700°C for a duration of about 20 seconds at a flow rate of about 200 sccm.

25. (ORIGINAL) The process of claim 19 wherein the surface comprises a surface of a material layer selected from among a doped epitaxial material, an un-doped epitaxial material, a doped bulk silicon substrate and an un-doped bulk silicon substrate.

26. (CURRENTLY AMENDED) The process of claim 19 ~~further comprising:~~

~~(c) forming a material layer over the surface, wherein the material polysilicon layer is selected from between a doped polysilicon material and an un-doped polysilicon material.~~

27. (CANCEL)

28. (CURRENTLY AMENDED) The process of claim ~~19~~ 26 wherein ~~the steps (a); and (b) and (c)~~ are practiced at about the same an equivalent pressure.

29. (CANCEL)

30. (CURRENTLY AMENDED) The process of claim 19 ~~further comprising:~~

~~(c) forming a material layer over the surface, wherein the polysilicon material layer comprises an arsenic-doped polysilicon material.~~

31. (CURRENTLY AMENDED) The process of claim 19 wherein the step (a) further comprises ing:

(a1) exposing the surface to a nitrogen-containing gas at a temperature of between about 500°C and 800°C and at a flow rate of about 200 sccm to remove contaminants from the surface; and

(a2)(e)—subjecting the surface to a hydrogen bake.

32. (CURRENTLY AMENDED) The process of claim 31 wherein ~~the a step (e) further comprises supplying the hydrogen~~ bake comprises supplying hydrogen for a duration of about 60 to 90 seconds at a temperature of about 700°C.

33. (CURRENTLY AMENDED) The process of claim 31 ~~further comprising:~~

~~(d) forming a material layer over the surface;~~ wherein the polysilicon material layer is selected from between a doped polysilicon material and an un-doped polysilicon material.

34. (CURRENTLY AMENDED) The process of claim 31-33 wherein ~~the steps (a1) and (a2) through (d)~~ are performed in-situ.